

ENVIRONMENTAL ASSESSMENT (EA) FOR RAINBOW VALLEY PROJECT

1.0 INTRODUCTION

The Bureau of Land Management (BLM) has received a Plan of Operations to mine and process coarse-grained granite (the Maricopa Granite of Skotnicki, 2002) to produce feldspathic sand on BLM managed land in Rainbow Valley about 8 miles south of the town of Buckeye in Maricopa County, Arizona, as shown on Figure 1. The Plan of Operations details plans for opening the mine, constructing the plant, mining and processing the granite and reclaiming the area. The size of the proposed disturbance is 89 acres, including the open pit mine, soil and overburden stockpiles and the processing plant. Approximately 5.6 miles of existing dirt road would be improved and 3.7 miles of new dirt road would be built. Over the proposed 20 year life of the Proposed Action, approximately 4 million tons of ore would be mined.

1.1 Purpose and Need for the Proposed Action

The Federal Land Policy and Management Act of 1976 (43 U.S.C 1732) requires the Secretary to prevent unnecessary or undue degradation of the public lands from operations conducted under the Mining Law. BLM regulations at 43 CFR 3809 were developed to prevent unnecessary or undue degradation and require operators mining on BLM lands to submit a Plan of Operations and obtain BLM approval before conducting operations (43 CFR 3809.11(a)).

Wesco Minerals, LLC (Wesco), an Arizona corporation, has submitted a Plan of Operations to the BLM seeking approval to mine and process coarse-grained granite on BLM lands. In accordance with the rights of entry and use under the Mining Law and the requirements in the regulations at 43 CFR 3809, the BLM must review the Plan of Operations to determine whether it is adequate to prevent unnecessary or undue degradation. The BLM may approve the Plan of Operations as submitted, approve it subject to changes or modifications necessary to meet the performance standards of 3809.420 and prevent unnecessary or undue degradation, or disapprove/withhold approval of the Plan of Operations because it would result in unnecessary or undue degradation. The BLM must approve a Plan of Operations if the Plan would not result in unnecessary or undue degradation.

While the BLM must approve a Plan of Operations that does not result in unnecessary or undue degradation, the approval is a federal action which requires the BLM to comply with the National Environmental Policy Act (NEPA). The BLM prepares an environmental analysis of the impacts from the Proposed Action (the Plan of Operations) and possible alternative(s) in accordance with the Council of Environmental Quality (CEQ) regulations implementing the provisions of NEPA (40 CFR 1500-1508). The results of the environmental analysis (in this case an environmental assessment) will assist in determining whether the Plan of Operations is adequate to prevent unnecessary or undue degradation, whether any mitigating measures are needed, and whether impacts from the Plan of Operations would be significant under NEPA thus requiring the preparation of an Environmental Impact Statement (EIS).

1.2 Relationship to Land Use Plans

1.2.1 Ownership. The surface and mineral estates in the Proposed Action area are owned by the federal government and are administered by the BLM. The lands are open to mineral entry under the Mining Law and mineral material sales under 43 CFR 3602. There are no pre-1955 claims or oil and gas leases or activity occurring in the area. There is an existing grazing lease.

1.2.2 Land Use Planning. The Proposed Action described in Section 2.1 is in conformance with the *Lower Gila South Resource Management Plan Environmental Impact Statement (RMP/EIS)*, approved June 1988. The RMP/EIS states on page 12: “Private industry is encouraged to explore and develop federal minerals to satisfy national and local needs. This policy provides for economically and environmentally sound exploration, extraction, and reclamation practices. Public lands are open and available for mineral exploration and development unless withdrawn or administratively restricted. Mineral development may occur along with other resource uses.” This proposed action has been reviewed to determine if it conforms to the land use plan terms and conditions as required by 43 CFR 1610.5.

1.2.3 Relationship to Statutes, Regulations, Policies or other Plans. The Proposed Action described below is consistent with federal, state and local laws. As well as obtaining BLM approval of the Plan of Operations, the operator must obtain all other necessary permits and approvals before commencing mining or construction.

1.3 Issues

Issues were identified by the Phoenix Field Office resource specialists during review of the operator’s Plan of Operations (original February, 2005 and revised Plan of Operations received in May 2005) and during a field visit conducted on June 17, 2005. BLM specialists identified air quality, water quality, soils, vegetation and wildlife, cultural resources, Native American religious concerns, National Energy Policy, noise, socioeconomics, transportation, safety, and land use concerns that would need further study and analysis through this environmental assessment.

1.4 Cumulative Actions

Existing actions considered while determining the cumulative impacts include the Southwest Regional Landfill, the Sam Lewis Prison, the Panda twin 500 kilovolt (kV) powerlines, the Palo Verde/Pinal West Salt River Project (SRP) 500 kV powerline, the Palo Verde - Kyrene 500 kV powerline, the Arizona Public Service (APS) 69 kV powerline, and the El Paso Natural Gas pipeline. The Southwest Regional Landfill and Sam Lewis Prison are located along Arizona State Route 85 (SR 85) approximately three and four miles, respectively, southwest of the plant site. The twin Panda 500 kV powerlines run generally north-to-south to the east of SR 85 and are two and three miles west of the plant and pit sites, respectively. The Palo Verde/Pinal West SRP 500 kV powerline runs generally east-to-west along Komatke Road, and passes about one mile south of the plant site. The Palo Verde - Kyrene 500 kV powerline runs generally southwest-to-northeast, passing within one-half mile of both the plant and pit sites. The

Arizona Public Service (APS) 69 kV powerline runs northwest-to-southeast, passing along the northeast side of the plant site, and will be used to supply electric power to the plant. The El Paso Natural Gas pipeline also runs generally east-to-west along Komatke Road, and passes about one mile south of the plant site. The Proposed Action and the adjacent operations are unlikely to result in cumulative impacts, specifically addressing the potential for air quality, noise or visual cumulative impacts.

Proposed actions in the area include the Kilauea Crushers, Inc. mine, the MotoTrax outdoor recreation area, and a new 36-inch natural gas pipeline for El Paso Natural Gas. The proposed Kilauea Crushers, Inc. mine would be located about two miles east of the pit site. The proposed MotoTrax outdoor recreation area would be located about two miles west of the pit site. The new 36-inch natural gas pipeline would generally parallel the existing El Paso Natural Gas pipeline along Komatke Road.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Plan of Operations proposes mining approximately 200,000 tons per year of coarse-grained granite ore over the life of the Proposed Action from a pit located in Section 10, T2S, R3W. Wesco would employ a contractor to mine, crush and stockpile the ore. The contractor would produce 200,000 tons per year of -3 inch crushed ore during a mining campaign of approximately two months during the winter. Wesco would provide overall direction of the contractor's operation. The ore would be hauled to the plant over the 3.2 mile haul road year-round. The ore would be processed at the plant using a confidential, non-chemical process to produce sized feldspathic sand, with biotite mica as a by-product. The Proposed action is described in the *Rainbow Valley Project Mining and Reclamation Plan*, dated May, 2005. Please refer to that document for a full description. The operation is summarized below.

2.1.1 Site Development Plan. The site development plan is shown on Figure 2. The planned development includes the pit, the processing plant, and the haul road and access roads. Detail of the mine site is shown on Figure 3, and detail of the plant site is shown on Figure 4.

2.1.2 Construction. Construction would require clearing and leveling of approximately 12 acres at the plant site, construction of concrete foundations for recovery equipment at the plant, pouring of a slab and erection of the 26,400 square foot plant building, drilling a water well, excavating and lining the process water settling pond, installation of equipment, power, gas and water distribution systems, access road improvement and fencing of the plant site. All facilities at the mine site (except the pit) would be temporary and would not require construction except for clearing and leveling within the boundaries of the pit, soil stockpile and waste rock dump site. Construction is estimated to require five months after receipt of necessary permits/approvals.

2.1.3 Open Pit Design. The pit would be rectangular, approximately 1,500 feet long by 1,200 feet wide, and 200 feet deep, mined in consecutive 20-foot high benches. Final side walls would be mined to a stable 1.5:1 slope. Haul roads would be 35 feet wide, with a maximum grade of 10 percent. Berms with a height of 4 feet would be provided on the outside edge of the haul road as required by U. S. Mine Safety and

Health Administration (MSHA) and Arizona State Mine Inspector (ASMI) regulations. Benches would be 20 feet high by 15 feet wide with approximately 0.75:1 intermediate bench face slopes.

Mining would begin at the southwest end and proceed to the northeast end, removing ore in 20' lifts. The haul road would be located along the pit walls.

2.1.4 Mining Parameters. The mining contractor would mine 100,000 to 200,000 tons and crush it to -3 inch size in a mining campaign approximately two months long. The contractor would work to his own schedule, but nominally 12 hours per day, five days per week, with maintenance on the off shift.

2.1.5 Protected Plant Species Removal. Salvageable native plants would be offered for salvage as required under the Arizona Native Plant Law (ARS 3-901 et seq). Saguaro cacti will be either replanted in the immediate vicinity but out of the area of impact, or stockpiled for use in revegetating the disturbed area.

2.1.6 Soil, Overburden and Waste Rock. Soil/overburden in the pit area is up to about two feet deep and consists mainly of sand, gravel and sandy loam in isolated patches. This material would be removed by dozer or loader and trucks and placed in a stockpile (see Figure 3) near the southwest corner of the pit. The soil stockpile would be constructed on uplands with side slopes of 5:1 and seeded with native grasses to prevent erosion.

Very little waste rock is expected to be encountered during mining of the orebody. Any encountered would be placed on the waste rock dump, located south of the pit (see Figure 3).

2.1.7 Bench Preparation. After soil/overburden removal, weathered ore would be ripped and pushed into a stockpile to create a free face for blasting. If material too hard to rip is encountered, the material would be drilled, blasted and then excavated by dozer to create the first bench for regular production blasting.

2.1.8 Drilling. Drill holes would be laid out from benchmarks established by survey. Drill hole diameter may vary, but would be in the range of 2.5 inches to 4.5 inches. The drilling pattern and depth of hole would vary with experience and with the diameter of the drill hole. With a 3-inch diameter hole, for example, a typical pattern would be about 7.5 feet (burden) by 10 feet (spacing) with a total hole depth of 23 feet (including subdrilling). Drilling would be done with an air-track or hydraulic drill equipped with water sprays, dust shields and/or dust cyclones to control dust.

2.1.9 Blasting. Nonel® initiation would be used to eliminate the loud "air snap" associated with detonating cord. A cast high-explosive booster would be lowered to the bottom of the hole on a Nonel® downline. Free-flowing ammonium nitrate-fuel oil mixture would be poured into the hole to about 6 feet below the collar (about 45 pounds of explosive for a 23-foot deep, 3-inch diameter hole. A second booster with independent downline located near the top of the explosive column may be used. Drill cuttings would then be shoveled into the hole to fill it to the collar.

Blasting would occur as soon as possible after hole loading is complete. The down lines would be connected in sequence to the trunk line. Delays may be inserted into the trunk line to give the desired delay between firing of individual holes or rows of holes. The number of holes per blast would vary at the contractor's discretion.

Before blasting, the pit and an area at least ¼ mile around it would be inspected by the supervisor to ensure that the area is clear of people and livestock. Roads into the

area would be blocked by mine personnel. When the area has been cleared for blasting, a warning horn or siren would be sounded. The initiator would then be connected to the trunk line and, after a final verbal warning, the shot would be fired. After the shot, the blast would be inspected by the blaster and if safe, the all-clear would be given by sounding of the horn or siren.

Blasting would be done generally at the end of the production day. Boulders too large to send to the crusher would be set aside to be drilled and blasted with a future production blast or broken by hydraulic rock pick.

2.1.10 Loading and Hauling Blasted Ore. The contractor would load the broken ore by front-end loader into 40 ton haul trucks. The trucks would haul and dump the ore into the crusher, located in the pit.

2.1.11 In-Pit Crushing. The ore would be crushed to nominal -3 inch size by a gyratory crusher and placed on a stockpile by a radial stacking conveyor.

2.1.12 Loading and Hauling Crushed Ore. Wesco would load the crushed ore into its 40-ton haul trucks using its front-end loader. The trucks would haul the ore from the pit to the plant, a distance of about 2.5 miles via an existing dirt road. The existing road would be widened to 24 feet to accommodate truck traffic. About 14 loads per day, 365 days per year, would be required to meet the needs of the plant. A water truck would be used to control dust on the haul road. Approved dust palliatives may be used to improve dust suppression efficiency and reduce water use.

2.1.13 Mining, Pit Crushing and Hauling Equipment. An equipment list is given in the table below. Typical equipment adequate for the job is given although the actual mining equipment selected by the contractor may differ.

Equipment	No.	Make/model/specifications
<u>Mining Equipment (contractor)</u>		
Dozer	1	Cat D8
Air track drill	1	Svedala model 402, 4.5" bit capacity
Powder truck	1	¾ ton pick-up
Water truck	1	5000 gallon
Front end loader	1	Cat 966
Haul truck	2	Cat 777
Fuel/maintenance truck	1	Mack 5 ton
Blasting/crew truck	1	Ford F-250
Pit crusher	1	30x42 jaw
Stacking conveyor	1	36"x 120', slewable conveyor
Generator	1	Cat 300 kW
Diesel fuel tank	1	5,000 gallon, above-ground, dual wall
Explosives magazine	1	BATF approved
<u>Hauling Equipment (Wesco)</u>		
Loader	1	Cat 966
Ore haul truck	2	40 ton
Grader	1	Cat 14
Water truck	1	5000 gallon

2.1.14 Processing. Processing at the plant would be initially at the rate of 100,000 tons per year and up to 200,000 tons per year after approximately one year. The process is a confidential non-chemical process that has been reviewed by the BLM. The plant would produce up to 200,000 tons per year of sized feldspathic sand and biotite as a by product with very little waste. Products would be loaded on trucks either in bulk or bagged, and hauled to the purchaser's facilities over one of the two routes described. Processing equipment is described in a separate confidential document provided to the BLM.

2.1.15 Access Roads. Present access to the Proposed Action site is via SR 85 to Komatke Road (13.8 miles south of I-10, just north of the Southwest Regional Landfill), east along Komatke Road (El Paso Natural Gas Co. right of way) about 2.5 miles, then northeast on an existing road about 0.8 mile to the plant site (the western route). An alternate route to the site is via Riggs Road (a Maricopa County road) to Komatke Road, then west-northwest along Komatke Road 1.2 miles to the road alongside the APS 69 kV powerline, then northwest 1.6 miles along this road to the plant site (the eastern route). The pit site is about 3.2 miles northeast of the plant site via an existing road. The access routes are shown on Figure 2.

Komatke Road is not suitable for heavy truck traffic because the natural gas pipeline is not buried sufficiently deep to ensure that the line would not be damaged. The best access route is the western route to SR 85. To use this route while avoiding Komatke Road requires crossing BLM, State of Arizona, and Town of Buckeye land. Wesco has applied for a right of way across these lands but the process to obtain rights-of-way from these various owners is uncertain and time-consuming.

To provide timely access, Wesco plans to improve the eastern route by widening the road running southeast from the plant along the 69 kV powerline to the north side of Komatke Road. This road is outside the powerline right of way, which is 10 feet wide centered on the powerline. From this point, Wesco plans to build a new road to Riggs Road along the northeast side of Komatke Road, with a 25-foot separation between the southern edge of the new road and the natural gas pipeline. These new roads would be 25 feet wide.

Wesco plans to transport its product in trucks with approximately 25 ton payloads. At full production of 200,000 tons per year, this would require 8,000 truck trips per year. Traffic to and from the plant would also include employees, vendors and visitors. The number of vehicle trips per day on the access road would be:

Vehicles	Trips/Day*
Product haul trucks, assuming hauling 5 days per week , 25 tons/load	64
Employee vehicles, assuming all drive	22
Vendor and visitor vehicles	8
Total trips per day	94

*Number of trips = trips coming + trips going.

2.1.16 Power Supply and Distribution. Power for the plant would be obtained from the 69 kV APS electric powerline adjacent to the plant site. Power would be

supplied through an underground conduit from a pole- or ground-mounted transformer at the powerline. The mining contractor would provide power for its operation from a diesel-powered generator located at the pit.

2.1.17 Water Supply and Storage. Up to about 14,000 gallons per day would be needed for road watering, ore processing, plant dust control, and some minor domestic (non-potable) use. Water usage would be less during periods of wet weather and in the winter. Wesco plans to obtain the water needed from a well drilled at the plant. The well would be drilled near the southwest corner of the plant site as shown on Figure 4. Wells in the vicinity have encountered water at a depth of about 300 feet. Water from the well would be pumped directly into a 10,000 gallon elevated water tank, located adjacent to the well (see Figure 4) and which serves as a water truck fill tank and head tank for the plant water system. Water would be piped from the tank to the plant through a buried 2-inch schedule 40 PVC pipe. There are existing water wells in the area controlled by BLM (see table in Section 3.2.3, below) and within one to two miles of the plant, that could be used as alternative or supplemental sources of water, using water truck or pipeline to reach the plant site.

2.1.18 Explosives Storage. The mining contractor would store explosives in BATF-approved magazines located in the pit.

2.1.19 Fuel Storage. Diesel fuel would be stored in above-ground, dual containment 5,000 gallon tanks. Four to six 1,000 gallon propane tanks would be used to provide gas for the dryers.

2.1.20 Maintenance Area. The mining contractor would maintain its equipment in or adjacent to the pit. Major repairs would be done off-site.

Wesco would maintain its mobile equipment and plant equipment at the plant. Major repairs would be done off-site

2.1.21 Office. The office would be located inside the plant building.

2.1.22 Sanitary, Solid and Liquid Waste Disposal. Initially, Wesco would use serviced portable toilets for sanitary wastes. A septic system may be installed later after a county permit is obtained.

Waste paper, filters, garbage and non-hazardous trash generated on site would be stored in closed containers and disposed of at the Southwest Regional Landfill. Scrap wood, equipment tires and similar non-hazardous items would be accumulated in a designated storage area and transported to the Southwest Regional Landfill as required.

Used lube oil, hydraulic fluid, antifreeze, solvents, greases and similar products would be stored in closed containers and disposed of by a contract recycler. Empty drums would be recycled.

Water from the process would be stored in a lined settling pond and recycled to the process. No flocculants or other reagents would be added.

2.1.23 Site Security. The plant would be enclosed with a chain-link fence. A gate and the building would be locked during times when no one is present.

2.1.24 Fire Protection. Fire extinguishers would be mounted on mobile equipment, at strategic locations inside the plant building and at fuel storage facilities.

2.1.25 Work Force. Wesco would employ 11 workers for its hauling and plant operations at full production: one plant manager, three mill foremen, three mill operators, one crusher operator, one loader operator and two truck drivers. After an initial start-up period, the plant would operate one shift per day, 236 days per year, building up to three

shifts per day, 365 days per year. Workers would be added during the first year as production warrants.

The construction contractor would require about five months to construct the plant and facilities. The construction contractor would work one 8 to 12 hour shift, five days per week. The number of construction workers would vary with the construction activity, but should not exceed about 15.

The mining contractor would generally work 12 hours per day during the two month mining campaign. Maintenance that can not be completed during the operating shift would be done on the off shift. The number of workers employed by the mining contractor may vary, but would be around ten.

2.1.26 Reclamation Plan. At maximum, about 89 acres of BLM land would be disturbed under this plan: pit, 41 acres; waste rock dump, 10 acres; soil stockpile, 4 acres; plant, 12 acres; and roads, 22 acres (counting existing and new roads required for the eastern and western access routes). Because most of the area would be in use during production and the total area is small, reclamation would be undertaken when mining is complete. The approach would be to return the waste rock dump, soil stockpile area, plant site and roads to productive use through removal of equipment, buildings and other facilities, contouring the surface, and revegetating. The pit bottom would be covered with salvaged soil and revegetated. Specifics of the reclamation plan are given below.

2.1.26.1 Pit. BLM Manual Handbook H-3042-1 states that final landforms should:

- be mechanically stable
- promote successful revegetation
- prevent wind and water erosion
- be hydrologically compatible with surrounding landforms, and
- be visually compatible with surrounding landforms.

The planned final configuration of the pit is rectangular, averaging 1500 feet by 1000 feet, with a maximum depth of 200 feet. The final pit walls would be mined to an overall 1.5:1 slope during the production phase of the pit as described in Section 3.3.1 above. The upper 20-foot highwall would be rounded back by ripping and dozing to provide a transition from the surface to the pit for safety of people and animals. A 5-foot high berm would be placed along the outside edge of the first bench as an added precaution. The rounding would add 50 feet to the width and length of the pit. The 5-foot berm around the pit perimeter would be refurbished, seeded and left in place. Warning signs would be posted around the perimeter as required by the ASMI.

The pit bottom would be covered by soft overburden and soil and revegetated as described in Section 2.1.26.5. A pond would be created in the pit bottom to collect runoff for wildlife watering, assuming quality testing proved the water to be suitable for such use. The haul road into the pit would be blocked by large boulders to exclude vehicles but allow the passage of animals. The access road into the pit would be ripped and revegetated.

The 1.5:1 pit slopes are inherently stable; the angle of repose of broken rock is typically a steeper 1.3:1 and fractured rock a much steeper $\frac{3}{4}$:1. No significant runoff is anticipated from the slopes due to the permeable nature of the material, but what there is would be collected in the pond. Wind erosion should be minimal in the recessed pit not only because of its depressed profile but because of the coarse nature of the

material and revegetation of the pit bottom. The reclaimed pit would be above the water table. Surface water would be diverted away from the pit to minimize interference with local drainage. The pit would be virtually invisible from any near-by ground vantage point.

2.1.26.2 Waste Rock Dump. The faces of the waste rock dump would be flattened to a 3:1 or flatter slope. The top surface and faces would be covered with soft overburden and soil and revegetated as described in 2.1.26.5.

2.1.26.3 Plant. Mobile equipment, processing and other equipment would be removed once operations are complete. The plant building would be disassembled and salvaged. Concrete slabs and foundations would be broken into manageable chunks and disposed of at an approved landfill. The water well would be abandoned as required by the Arizona Department of Water Resources Well Abandonment Handbook. Prior to abandoning the water well, the BLM will be contacted and may take assignment of the well for stock or wildlife watering, if the water quality and quantity are sufficient for such purposes. Risers for buried water lines, gas lines and electrical conduit would be cut off at least 18 inches below ground level and the lines left in place. The copper conductor would be salvaged. The fence would be removed and salvaged. The plant area would then be prepared for revegetation as described above.

2.1.26.4 Roads. Roads not needed for access to BLM lands would be prepared for revegetation by ripping and grading to match local topography.

2.1.26.5 Revegetation. Large rocks would be removed from the areas to be seeded. An imprint roller would be used where it would be effective. Impressions shall be stable and at least four inches deep. The areas to be revegetated would be tested to determine nutrients, pH, toxicity and biological activity. Areas low in essential nutrients or in need of amendment may be fertilized/amended before planting. The fertilizer/amendment would be drilled or harrowed into the soil. Nitrogen fertilizers would be selected to release at the time of seed germination to avoid nitrogen loss.

Following soil preparation, the areas would be seeded with an approved native seed mix. The seed mix would be selected to suit the soil type and climate, and would contain a mixture of species for warm and cool season growth. The seed mix would contain a mixture of grasses, forbs, shrubs and other appropriate plants. It would contain species that provide for quick cover, embankment stabilization, litter production, nitrogen fixing, and other desirable qualities. Native plant species growing in the vicinity would be used as a guide in seed selection. A proposed seed mix is given in the table below:

Species	Application
Grasses	(lb./acre)
<i>Aristida purpurea</i> (purple three awn)	1
Wildflowers and Forbs	
<i>Baileya multiradiata</i> (desert marigold)	1
<i>Cassia covesii</i> (desert senna)	1
<i>Eschscholzia mexicana</i> (Mexican poppy)	1
<i>Lupinus sparsiflorus</i> (desert lupine)	2
<i>Penstemon pseudospectabilis</i> (desert penstemon)	1
<i>Penstemon parryi</i> (Parry penstamon)	1

Phacelia crenulata (phacelia)	1
Plantago insularis (wooly Indian wheat)	5
Sphaeralcea ambigua (desert globemallow)	1
Shrubs and Trees	
Acacia greggii (catclaw acacia)	2
Ambrosia deltoidea (triangle leaf bursage)	4
Atriplex canescens (four-wing saltbush)	1
Calliandra eriophylla (fairy duster)	2
Cercidium microphyllum (foothills palo verde)	2
Parkinsonia floridum (blue palo verde)	1
Encelia farinosa (brittlebush)	1
Erigonum fasciculatum (Arizona buckwheat)	1
Larrea tridentate (creosote bush)	3
Viguiera deltoidea (golden-eye)	1

Seedbed preparation and seeding would be done in the fall just prior to the onset of the winter rains. Cellulose fiber mulch would be added to the seed mix at the rate of 200 pounds per acre on slopes and the pit bottom. A tackifier would be added to the solution to bind the soil and mulch. Supplemental watering of the seed mixture will be provided, if needed due to lack of seasonal rains. Reclamation would require approximately two months to complete, except for monitoring.

2.1.26.6 Monitoring. Wesco would monitor reclamation quarterly for the first year to repair washouts and re-seed as necessary. After the initial year, Wesco would inspect the property annually for the next two years during the growing season and would take remedial measures as required until plant survival is satisfactory to the BLM. The revegetation goal is to establish ground cover with native species equal to that on an adjacent undisturbed area within three growing seasons. Achievement of this goal would be measured by aerial photography or by line intercept methods. Sampling would be sufficient to provide assurance that the revegetated area achieves at least 80% of the true mean cover of the reference (undisturbed) site.

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not approve the Plan of Operations and the area would remain in its current condition.

3.0 AFFECTED ENVIRONMENT

Rainbow Valley is a broad valley between the Buckeye Hills on the north and the Maricopa Mountains on the south. The valley slopes gently (~0.2%) to the southwest, and is drained by Rainbow Wash, a tributary of the Gila River. The area is crossed by electric powerlines, natural gas pipelines, and unimproved roads.

3.1 Critical Elements Not Analyzed

The following critical elements of the environment are either not present or would not be affected by the Proposed Action:

- Areas of Critical Environmental Concern
- Environmental Justice

- Prime or Unique Farmlands
- Floodplains
- Wetlands/Riparian Zones
- Wilderness

3.2 Analyzed Elements

3.2.1 Climate. The nearest reporting station is Buckeye, Arizona, which has been recording data since 1893. It is located about eight miles north of the Proposed Action site at 980 feet elevation. The Proposed Action site elevation is 1040 feet for the plant and 1060 to 1080 feet for the pit. The climate is typical of the Arizona low desert, with average high/low temperatures ranging from 105/71 degrees Fahrenheit (°F) in the summer to 70/36 °F in the winter. The highest temperature recorded was 125 °F in July and the lowest 11 °F in January. The average annual precipitation is 7.59 inches, with an annual high of 21.80 inches and an annual low of 1.40 inches. Historically, July, August, December and January are the wettest months with average precipitation of more than 0.8 inch each, while April, May and June are the driest with average precipitation of less than 0.3 inch each. Essentially all precipitation is in the form of rain.

3.2.2 Air Quality. Air Quality is regulated under the Clean Air Act, Arizona Revised Statutes (ARS) 49-480, and Maricopa County Air Pollution Control Regulations. Maricopa County is a non-attainment area for PM₁₀ particulates, ozone, CO and SO₂ (*EPA Green Book, 2004*). The mine and plant would have the potential to emit dust and other regulated pollutants.

3.2.3 Water Quality and Quantity. Several State and Federal laws are designed to protect water quality. Section 404 of the Clean Water Act prohibits any dredging or filling of jurisdictional waterways without a permit from the US Army Corps of Engineers. The Arizona Pollutant Discharge Elimination System (AZPDES) storm water program requires operators of construction activities disturbing more than 1 acre and 11 categories of industrial activities to obtain permit coverage and to implement storm water discharge management practices, or best management practices (BMPs). The Arizona Aquifer Protection Program requires a permit to discharge to groundwater.

Mean annual rainfall is 7.59 inches, with a mean of 2.50 inches falling in the winter, 2.07 inches in the summer, 1.89 inches in the fall, and 1.13 inches in the spring. Evaporation far exceeds precipitation even in the wettest years.

There are no perennial surface waters near the Proposed Action site. Surface waters are limited to ephemeral flows in normally-dry washes in response to rainfall events. Rainbow Valley is drained by Rainbow Wash, which flows generally to the west and southwest toward the Gila River, joining it about 8.5 miles southwest of the plant site. The pit and plant sites are located on uplands. The Proposed Action is located within the Lower Gila Watershed of the Gila River System and Source General Water Rights Stream Adjudication. The proposed water well site is located outside of the Phoenix Active Management Area (AMA) within the Gila Bend groundwater basin.

The following wells are registered with the Arizona Department of Water Resources within T2S, R3W:

Well Number	Section	Approx. Elev.	Depth to Water	Water Elev.	Year

55-506918	2	1060	192	868	1984
55-532050 *	7	980	300	680	1991
55-634122	16	1000	305	695	1982
55-532049 *	18	960	310	650	1991
55-803737	19	952	350	602	1986

* BLM controlled water well

The elevation of the water level varied from 868 feet in Section 2 to 602 feet in Section 19, indicating a hydraulic gradient of approximately 63 feet per mile in a southwesterly direction. The pit bottom at elevation 870 feet (~3/4 mi. SW of well 55-506918) should be above the water table.

On March 28, 2005, the Corps of Engineers issued a decision of jurisdictional delineation identifying jurisdictional waterways within the Proposed Action area. Proposed Action facilities would be located on uplands and would not affect jurisdictional waterways. The haul road between the mine and the plant crosses Rainbow Wash, a jurisdictional waterway. This road would require periodic maintenance, which is covered under Section 404 Nationwide Permit 14. The proposed disturbance is below the 1/10 acre threshold for notification of the Corps of Engineers (Federal Register Vol. 67, No. 10, Jan 15, 2002/Notices).

3.2.4 Soils. The BLM has developed rules in conjunction with the Natural Resources Conservation Service. The hyperthermic arid soils in the area form a thin veneer over granitic bedrock. Topsoil in the pit area is up to about 1 foot deep and consists mainly of sand, gravel and sandy loam in isolated patches. The soil type appears to be of the Gunsight-Rillito-Pinal Association. The Proposed Action has the potential to cause accelerated soil erosion.

3.2.5 Vegetation and Wildlife. Congress passed the Endangered Species Preservation Act in 1966. This law allowed listing of only native animal species as endangered and provided limited means for the protection of species so listed. The Departments of Interior, Agriculture, and Defense were to seek to protect listed species, and insofar as consistent with their primary purposes, preserve the habitats of such species. Land acquisition for protection of endangered species was also authorized.

The Endangered Species Conservation Act of 1969 was passed to provide additional protection to species in danger of "worldwide extinction". Import of such species was prohibited, as was their subsequent sale within the U.S. This Act called for an international ministerial meeting to adopt a convention on the conservation of endangered species. The Endangered Species Act of 1973 served to consolidate and strengthen the provisions of its predecessors.

One of the principal provisions of the 1973 Act (Section 7) requires all Federal agencies to undertake programs for the conservation of endangered and threatened species, and prohibits from authorization, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat".

Biological Evaluations covering the mine, plant site, access and haul roads was conducted by the staff of SWCA Environmental Consultants, Inc. (SWCA) between January and July 2005. No threatened or endangered species or their habitat will be affected by the proposed action.

3.2.6 Visual Resources. The area is designated Class III under the Visual Resource Management Classification system. The objectives of Class III is to partially retain the existing character of the landscape, with any change to the characteristic of the landscape to be at a moderate level, and while the change may attract the attention of the casual observer the change should not dominate the view.

A Visual Impact Analysis of the area was made using the Map Tech® Professional USGS Topographic Series Line of Site program. Twelve key observation points (KOP) were selected for analysis, including four along SR 85 to the west, six from the tops of various peaks in the Sonoran Desert National Monument to the south, and two others to the east and north of the Proposed Action. The KOP's are shown in relation to the mine and plant sites, and the immediately surrounding area, on Figure 5. While the mine and plant will be visible from some of the KOP's in the Sonoran Desert National Monument to the south and some other higher locations, the impact will be minimal due to the distances involved, generally at least four miles, and the painting of the relatively small buildings and structures at the plant site to blend in with the natural desert surroundings. Several electric powerlines and a natural gas pipeline cross the area. The Southwest Regional Landfill and a major Arizona Public Service Company substation lie along Komatke Road between the plant site and SR 85. The operation would not be visible from SR 85 or other public roads. The plant building would be visible from higher portions of the North Maricopa Mountains and Buckeye Hills.

3.2.7 Cultural Resources. Cultural resources are protected under several Federal laws. These laws were enacted to ensure consideration of historic values and to protect significant resources from destruction or theft. The major laws include: the National Historic Preservation Act (NHPA), Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act of 1978 (AIRFA).

Archaeological Surveys covering the mine, plant site, access and haul roads were conducted by the staff of SWCA Environmental Consultants, Inc. (SWCA) between January and July 2005. The surveys included a search of the files at the State Historic Preservation Office, the AZSite database, the Bureau of Land Management, and the National and State Registers of Historic Places, plus pedestrian surveys.

The Proposed Action has the potential to affect cultural resources.

3.2.8 Native American Religious Concerns. Past, present, and reasonably foreseeable activities in the region may result in a cumulative impact to resources of importance to Native Americans. The need to consider these potential impacts is addressed in the Archaeological Resources Protection Act, the National Historic Preservation Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, and Executive Order 13007.

Archaeological surveys were completed by the staff of SWCA between January and July, 2005. Consultation with appropriate Native American tribes will be done as part of the EA review.

The Proposed Action has the potential to affect Native American religious concerns.

3.2.9 National Energy Policy. The National Energy Policy requires an evaluation of access limitations to federal lands in order to increase renewable energy production from sources such as biomass, wind, geothermal, and solar, in addition to renewable

energy, and examination of land status and lease stipulation impediments to federal oil and gas leasing.

3.2.10 Traffic and Noise. The closest points of visibility of the mine and plant sites and the associated traffic are near the northern boundary of the Sonoran Desert National Monument. The nearest KOP's within the Sonoran Desert National Monument are more than six miles from the pit, three miles from the plant, and two miles from the access road. The nearest noise receptors are buildings at the Southwest Regional Landfill, 2.7 miles west-southwest of the plant site and a ranch building 2.8 miles east-northeast of the pit. There are no noise receptors close enough to be disturbed by the Proposed Action.

3.2.11 Socioeconomics. The Proposed Action is located in Maricopa County, Arizona. The county has a population of about 3.5 million (2004 estimate) and grew by 45% between 1990 and 2000. The land area is 9,203 square miles, giving a population density of approximately 370 per square mile. The nearest community is Buckeye (approximately 12 miles to the north by road), with a population of 6,537 in 2000. Buckeye is one of the fastest-growing towns in the nation, with a current population estimated at over 20,000 (Buckeye Valley Chamber of Commerce). The Proposed Action has the potential to affect the local, county and state economy.

3.2.12 Current Land Use. The BLM is responsible for land use in the area of the Proposed Action. Surface management on the affected and surrounding sections is by the BLM. The surface is used primarily for cattle grazing. A 26,526 acre BLM Grazing Allotment (the Arnold Allotment, #03004) issued to Roberts Enterprises, Inc. covers pit, plant site and road between. Powerline right of way AR04861 (10 feet width) passes 100 feet northeast of the plant site. Powerline right of way A10350 (100 feet width) passes just northwest of the plant site and crosses Wesco's mining claims southeast of the pit site. The El Paso Natural Gas buried pipeline right of way A21968 (PHX 086067) along Komatke Road passes southeast of the plant site.

The north boundary of the Sonoran Desert National Monument, including the North Maricopa Mountains Wilderness, lies about 1.5 miles south of the plant site and about 3.5 miles south of the pit site. The Robbins Butte Wildlife Area (managed by the Arizona Department of Game and Fish) and Maricopa County's Buckeye Hills Regional Park both lie about four miles northwest of the Proposed Action site.

The proposed action has the potential to affect current land use.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Impacts of the Proposed Action Alternative

4.1.1 Climate. No impact.

4.1.2 Air Quality. Air quality permit number 050042 was issued to Wesco by Maricopa County Air Quality Department on October 11, 2005, for a period of up to five years. This permit covers operation of the processing plant. Wesco has also applied for an Earthmoving Permit to cover road construction and maintenance, mining and hauling operations. Impacts of the Proposed Action on air quality would be from dust release, mobile equipment or plant emissions. All equipment would have current pollution controls as required by the EPA during manufacture. Water from an on-site well would be used to control dust from mining and crushing at the mine and haul roads. Dust from

processing at the plant would be controlled by dust collectors as required by the county permit. The county permit also requires monitoring and reporting.

With the planned mitigation measures, the Proposed Action would have no significant impact on air quality.

4.1.3 Water Quality and Quantity. The mine and the plant would be located on uplands between unnamed washes tributary to Rainbow Wash. Storm water runoff impacts would be minimal and would be controlled. Runoff controls and BMPs are outlined in the *Storm Water Pollution Prevention Plan*.

No systems to discharge to groundwater would be used on site. The level of ground water in the area is well below the bottom of the planed open pit. An Aquifer Protection Permit is not required under ARS 49-241 because the Proposed Action has no potential for discharge of pollutants to an aquifer or to the land surface or vadose zone in such a manner that the pollutant would reach the aquifer. The pit bottom should be above the local aquifer. The coarse-grained granite ore does not contain sulfides or other potentially harmful minerals which can be leached and percolate into the aquifer. Chemicals would not be used in processing. Water used in the plant would be captured in a lined settling pond and would be recycled. Fuel would be stored in above-ground dual containment tanks and would be inspected in accordance with the Storm Water Pollution Prevention Plan. Other petroleum products would be stored within dual containment structures.

With the planned mitigation measures, the Proposed Action would have no significant impact on water quality.

4.1.4 Soils. Soil would be stockpiled for use in revegetation. The soil stockpile would be constructed on uplands and seeded with grasses to prevent erosion. Wetting of the roads and other disturbed areas to control dust would create a crust on in-place soil that would serve as a protective barrier to wind and water erosion. Runoff that might erode soil would be controlled under the Storm Water Pollution Prevention Plan BMPs. Vegetation would only be removed from areas needed for operations. Areas no longer needed for operations would be revegetated.

With the planned mitigation measures, the Proposed Action would have no significant impact on soils.

4.1.5 Vegetation and Wildlife. Biological Assessments were conducted by SWCA in January 2005 to July, 2005, to comply with the Endangered Species Act. The assessment covered approximately 329 acres, including the plant site and a 500-foot buffer zone around it, the mine site and a 1,000-foot buffer zone around it, plus approximately nine miles of haul and access road. SWCA's findings were:

- no endangered, threatened, proposed endangered or proposed threatened plants or animals are known to occur regularly within the Proposed Action area
- it is not likely that the Proposed Action will have an effect on any federally listed species or their habitat.

The US Fish and Wildlife Service recommended that the Rainbow Wash crossing be constructed to minimize vegetation loss so that the wash can be maintained as a wildlife corridor. The existing crossing is suitable for truck traffic and would require only minor improvement with minimal vegetation loss. Notice for a Section 404 (Clean Water Act) Nationwide Permit #14, Linear Transportation Projects is not required because less than 0.1 acres of jurisdictional waters would be disturbed.

With the planned mitigation measures, the Proposed Action would have no significant impact on vegetation and wildlife.

4.1.6 Visual Resources. According to the Visual Impact Analysis, the mine and plant will not be visible from SR 85 or other public roads. The plant building, mine, and associated vehicle traffic will be visible from near the northern boundary of the Sonoran Desert National Monument and from higher peaks of the Buckeye Hills and the northern portions of the Maricopa Mountains. The plant building, tanks and other structures will be painted to minimize visibility. Access and haul roads will be watered and/or treated with dust palliatives on a regular basis to minimize dust from the traffic.

With the planned mitigation measures, the Proposed Action would have no significant impact on visual resources.

4.1.7 Cultural Resources. SWCA found two prehistoric archaeological sites, consisting of low-density artifact scatters, considered eligible for inclusion in the National Register of Historic Places. Both sites are located in a buffer zone north of the mine site. SWCA recommended that these sites be avoided, which Wesco has agreed to do.

If cultural resources or a suspected artifact is encountered during the course of construction or operations, the operator must suspend operations and notify the BLM. The BLM would then determine the necessary course of action, in accordance with 43 CFR 3809.420(b) (8). If at-risk cultural properties are discovered, appropriate mitigation measures may be specified in consultation with the Arizona State Historic Preservation Office.

With the planned mitigation measures, the Proposed Action would have no significant impact on cultural resources.

4.1.8 Native American Religious Concerns. Although not a focus of the Archaeological Surveys, SWCA found no reason to suspect Native American religious concerns or traditional cultural properties in the Proposed Action area. As lead federal agency, the BLM will consult with appropriate Native American tribes to identify any Native American religious concerns or traditional cultural properties in the Proposed Action area.

4.1.9 National Energy Policy. The Proposed Action is not an energy exploration or development project and has no impact on potential oil and gas exploration and development, as the area is generally unsuitable for those actions (Stipp and Dockter, 1987).

4.1.10 Traffic and Noise. Traffic on the access road is estimated to be 94 vehicles per day (coming and going), including product haul trucks, and employee, vendor and visitor vehicles. There is currently occasional traffic associated with cattle grazing, maintenance of the natural gas pipeline and the electric powerlines, and recreational activities. The Proposed Action would have no significant impact on this traffic.

Public nuisance and noise are expected to be minimal due to mitigation measures included in the Mining Plan of Operations for the Proposed Action and the distance from nearby residences and communities. With the planned mitigation measures, the Proposed Action would have no significant impact on noise.

4.1.11 Socioeconomics. The Proposed Action would employ approximately 11 full-time workers at the plant. The mining contractor would employ approximately 10 full-time workers during the two month mining campaign. The contractor's workers

would be rotated to other projects between campaigns. Mine workers enjoy higher wages and benefits than most hourly workers. Buckeye, a town with a current population of about 20,000, is located about 12 miles (by highway) from the Proposed Action site. Gila Bend, a town with a population of about 2,000 is located about 25 miles south of the Proposed Action site.

Wesco would spend over \$2,000,000 per year for salaries, wages, contract services and supplies. In addition, Wesco's contractors and employees would purchase goods and services from suppliers in the Phoenix, Buckeye and Gila Bend areas. Each dollar generated by the operation generates additional economic activity through circulation and recirculation. Wesco, its contractors and suppliers would pay local, state and federal taxes.

In addition Wesco's products would provide competitively-priced raw materials for other industries in this rapidly-growing region. It would reduce or eliminate the need to import its products from out-of-state as is currently done, with a significant savings in freight costs and fuel.

The Proposed Action would provide a small but significant boost to employment, business activity, local and state revenue and raw materials availability in Maricopa County and surrounding areas. It would reduce the cost of materials for local consumers and result in a savings in fuel by eliminating long hauls from out-of-state suppliers.

4.1.12 Current Land Use. The Proposed Action would have an insignificant effect on the 26,526 acre grazing allotment. At its maximum planned extent, the Proposed Action would remove less than 82 acres from grazing use, most of which would be restored to grazing use at mine closure. It would have no effect on the allottee's improvements, including fences, wells, corrals and other facilities.

The Proposed Action would have a beneficial effect on local powerlines by improving roads used for powerline maintenance. The Proposed Action would have no significant effect on the Sonoran Desert National Monument, the North Maricopa Mountains Wilderness, the Robbins Butte Wildlife Area or the Buckeye Hills regional Park.

4.2 Impacts of the No Action Alternative

The Proposed Action area would remain in its current condition as described in Section 3, Affected Environment. No mining or processing activity would occur as described in the Plan of Operations. There would be no impact to resources in the Proposed Action area.

The area would remain open to mineral entry and mineral material sales or leasing. Other Plans of Operations or Notices could be submitted for mining activity in the future.

There would be a missed opportunity to realize the economic and social benefits that would result from the Proposed Action. These benefits include production of a valuable mineral commodity to fill a local need (feldspathic sand is currently being imported from California and Nevada), reduction in fuel usage to import this product, and the creation of 11 full-time jobs at the plant, approximately 15 temporary jobs for plant construction, and about 10 intermittent jobs for periodic mining campaigns.

5.0 CONSULTATION AND COORDINATION

5.1 Persons and Agencies Consulted

The following people and agencies, along with the general public, have been and would continue to be consulted regarding mining and reclamation at this site:

- US Army Corps of Engineers, Arizona-Nevada Area Office
- Arizona Department of Water Resources
- Arizona Department of Environmental Quality
- Arizona State Mine Inspector
- Maricopa County Air Quality Department
- Maricopa County Planning and Development Department
- Arizona Game and Fish Department
- City of Goodyear, AZ
- Community of Estrella, AZ
- Town of Buckeye, AZ
- Town of Gila Bend, AZ
- Ak-Chin Indian Community
- Gila River Indian Community
- Hopi Tribe
- Salt River Pima-Maricopa Indian Community
- Tohono O'odham Nation
- Southwest Regional Landfill
- El Paso Natural Gas Company
- Arizona Public Service
- Salt River Project – Public Lands Division
- Plains Pipeline LP
- Public Service Company of New Mexico
- Kilauea Crushers, Inc.
- MotoTrax, Inc.
- Roberts Enterprises, Inc. (Arnold Allotment grazing interest)

5.2 List of Preparers and Reviewers

- Fred B. Brost, P.E., Mining & Environmental Consultants, Inc.
- James V. Andersen, Lead Realty Specialist, U.S. BLM, Phoenix Field Office
- Cheryl Blanchard, Archaeologist, U. S. BLM, Phoenix Field Office
- Joseph A. Dixon, Geologist, U.S. BLM, Phoenix Field Office
- Lin D. Fehlmann, Hydrologist, U.S. BLM, Phoenix Field Office
- Rich Hanson, Recreation Team Lead, U. S. BLM, Phoenix Field Office
- Lee Higgins, Range Management Team Lead, U. S. BLM, Phoenix Field Office
- Matthew N. Plis. Mining Engineer, U. S. BLM, Phoenix Field Office
- Jack Ragsdale, Outdoor Recreation Planner, U. S. BLM, Phoenix Field Office
- Lori Young, Wildlife Biologist, U. S. BLM, Phoenix Field Office

6.0 REFERENCES

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- United States Environmental Protection Agency, 2004, EPA Green Book.
- Wilson, E. D., Moore, R. T., and Peirce, H. W., 1957, Geologic Map of Maricopa County, Arizona: Arizona Bureau of Mines, University of Arizona, Tucson, Arizona, scale 1:375,000.

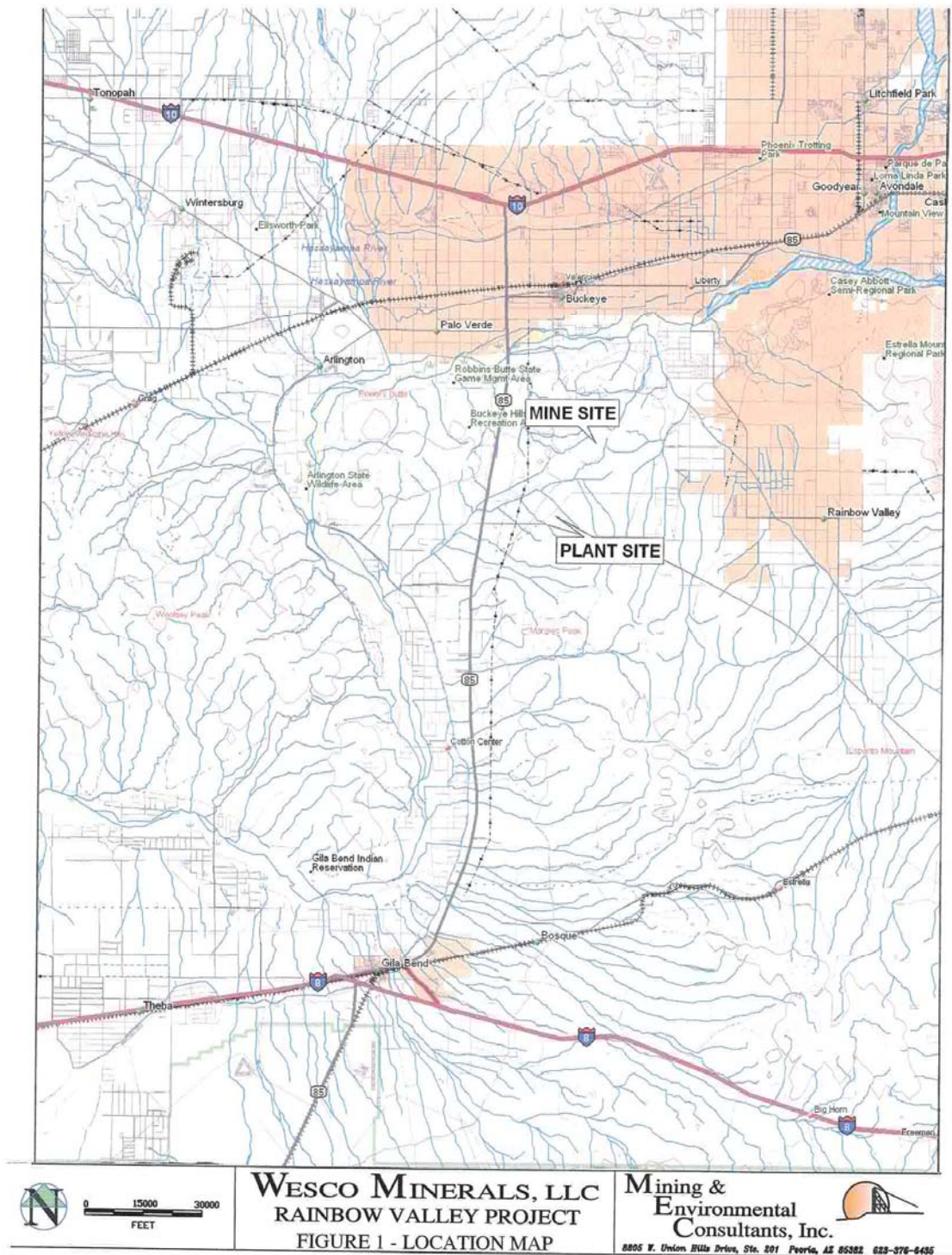


Figure 1. General Location Map

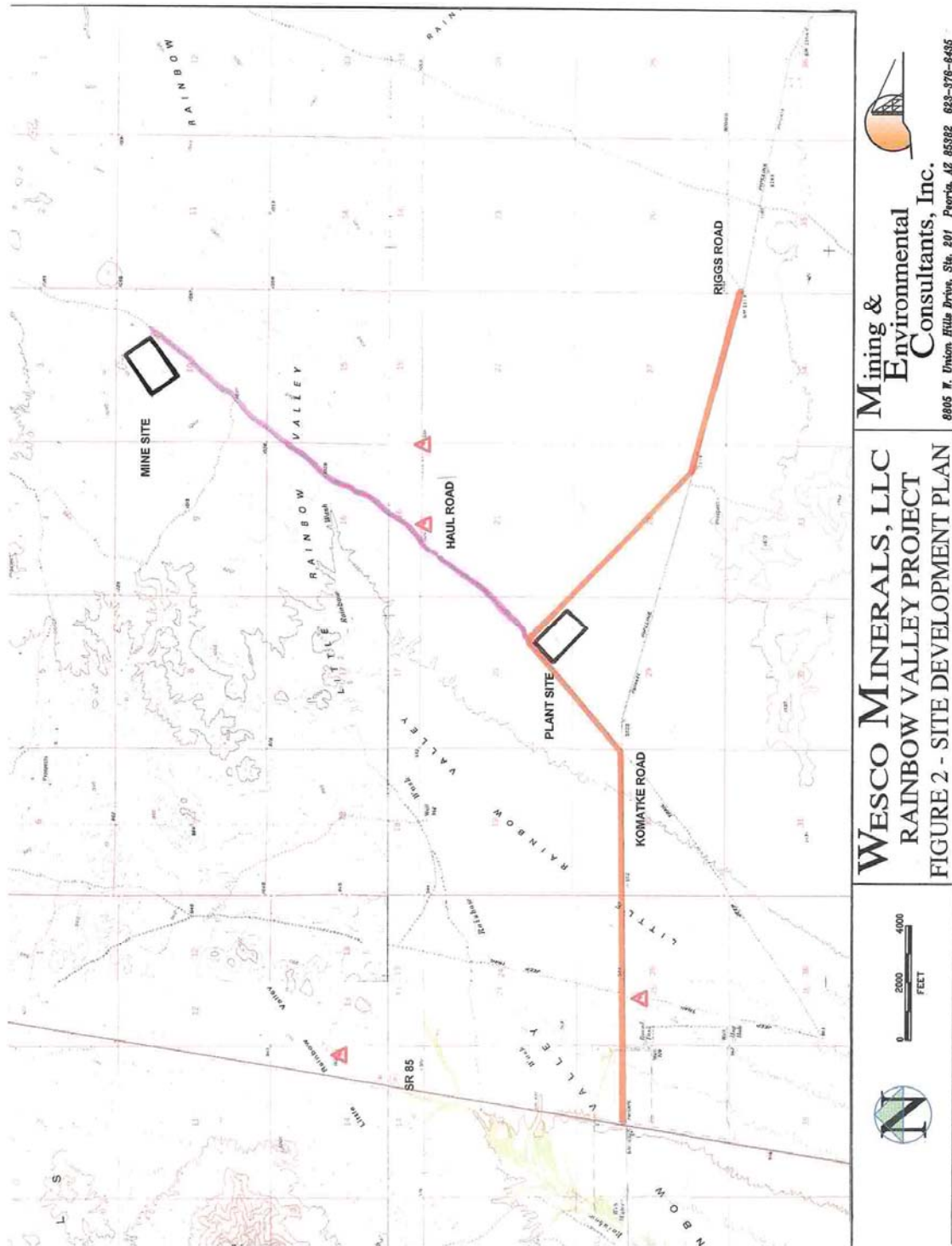


Figure 2. Site Development Plan

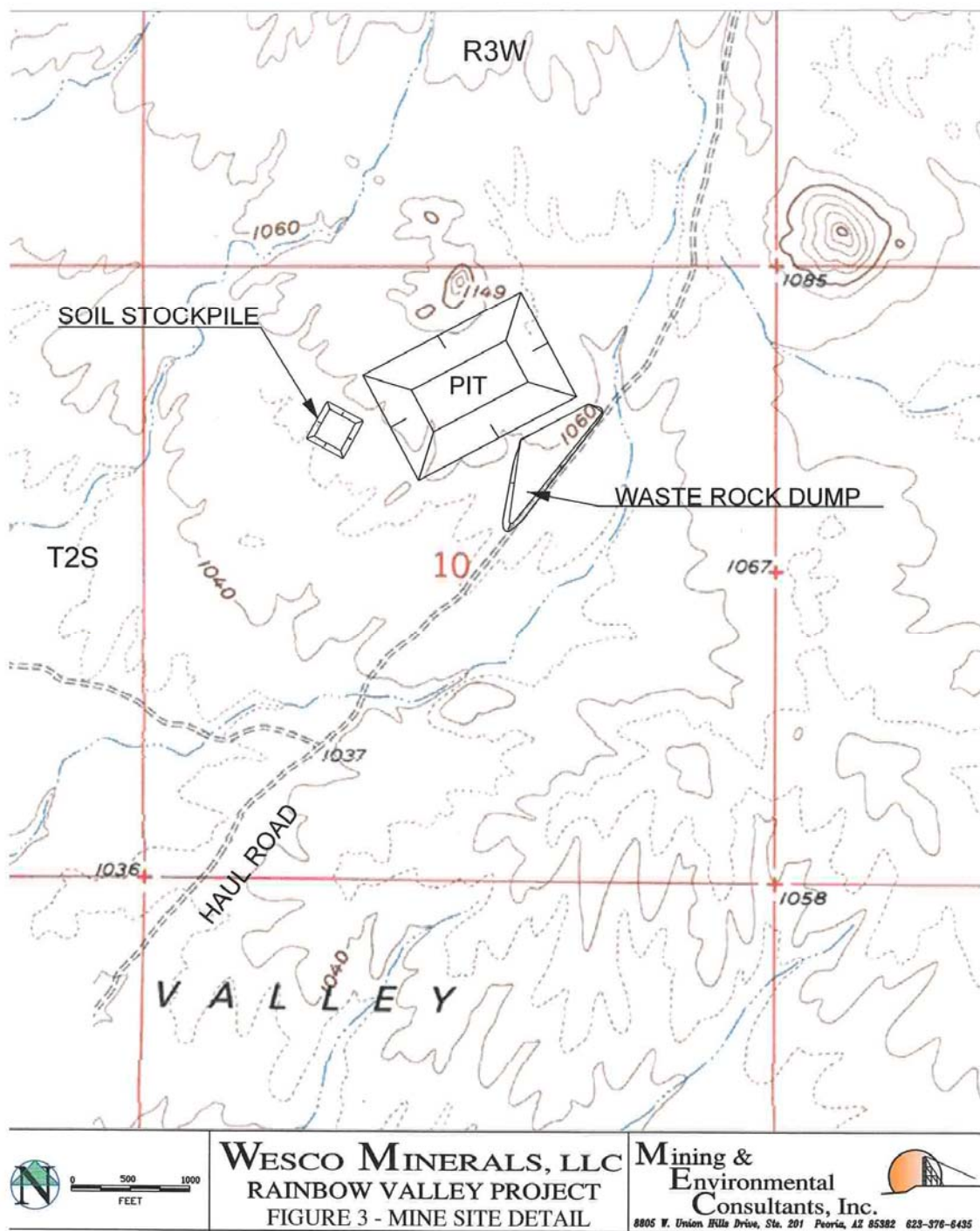


Figure 3. Mine Site Detail

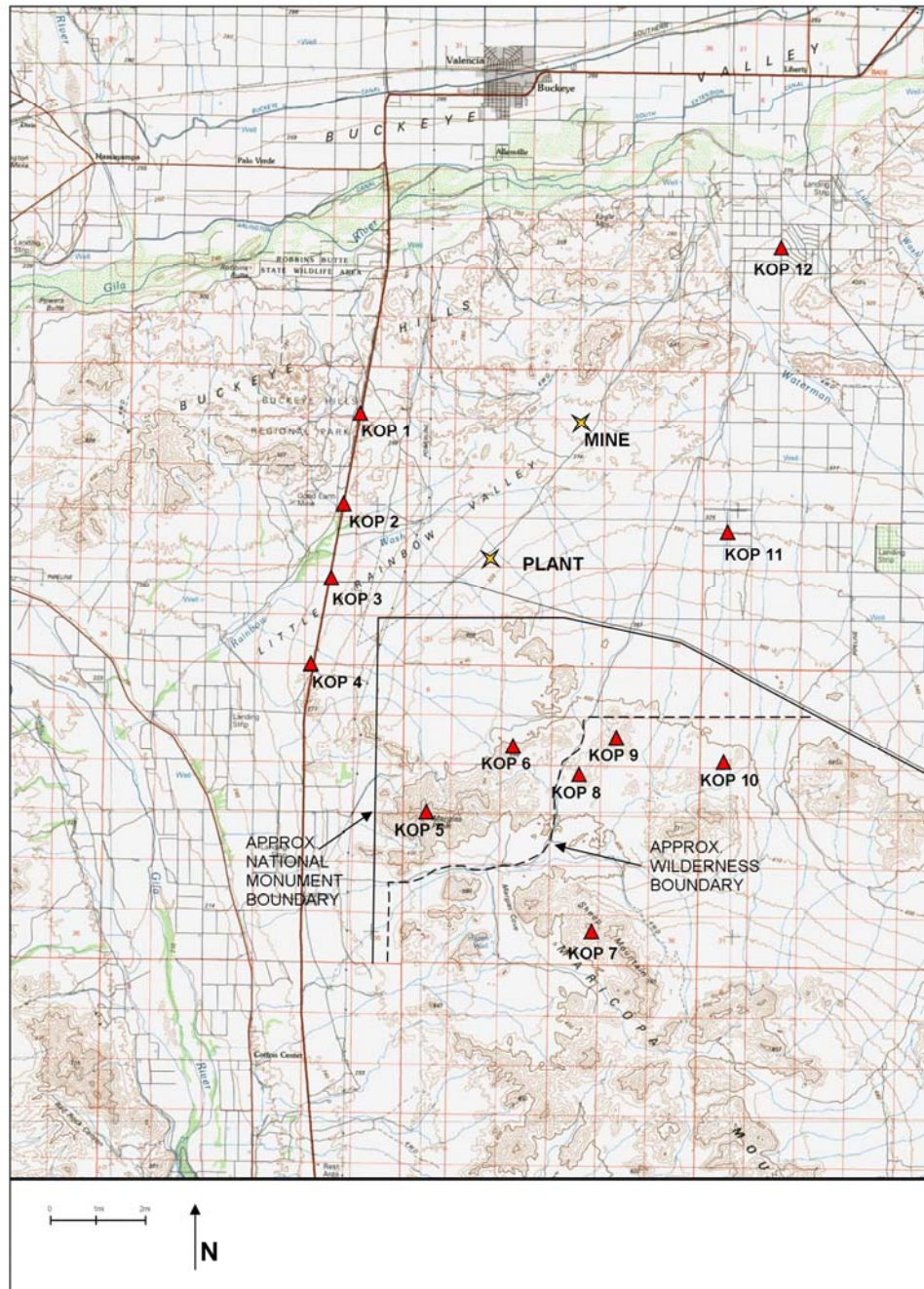


Figure 5. Visual Impact Analysis
(KOP = Key Observation Point)